

**[Insert title of invention]**  
**ELECTRONIC IDENTIFICATION  
SYSTEM WITH IMPROVED  
SENSITIVITY**

**Abstract of Disclosure**

The electronic identification system provides two-way communications between reader and tags using alternating magnetic fields established by the reader and tag. Communication is accomplished by utilizing either a one-step or a two-step modulation process in which the information to be communicated either modulates an alternating magnetic field directly or modulates a periodic signal which modulates an alternating magnetic field. The coil in the reader that is used to establish an alternating magnetic field is transformer-coupled through capacitors to a push-pull driving circuit consisting of four field-effect transistors connected in a bridge arrangement. The coil, capacitors, and coupling circuitry are maintained in a tuned condition by continually adjusting either the driving frequency, the coil inductance, or the capacitor capacitance during communications. A tag utilizes a coil to couple with the reader's alternating magnetic field and a capacitor to resonate the coil, thereby extracting power from the field more efficiently. Transformer coupling of the coil and capacitor is utilized for improved impedance matching. The coil, capacitor, and coupling circuitry can be maintained in a tuned condition by continually adjusting either the coil inductance, or the capacitor capacitance during communications. Certain configurations of the system may require that tuning maintenance be discontinued during the transmission of data.